

## ABSTRACT

A RF signal repeater system is added to a wireless communications network which increases user data rates at the periphery of the cellular coverage area by boosting the downlink (base station to mobile user) signal and uplink (mobile user to base station) signal. The RF signal repeater system includes a signal tagging means that adds a unique electronic signature to the repeated signal such that position determination errors due to a non-line of sight propagation path can be corrected. The repeated signal is received and processed with a location measurement unit to determine the time of arrival and to extract the signal tag of the repeated signal. The time of arrival measurement and recovered signal tag are then processed at a mobile location center to determine the true position of the transmitter.